

CLAIMS

What is claimed is:

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1. A switch matrix, comprising:
at least one row conductor; and
at least one column conductor, wherein at least one of said
at least one row conductor and said at least one column conductor is
capable of being driven with a predetermined voltage level, and is capable
10 of having a voltage level read therefrom.

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2. The switch matrix according to claim 1, further comprising:
at least one switching element adapted to connect said at
least row conductor to said at least one column conductor.

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3. The switch matrix according to claim 2, wherein:
a total number of said at least one switching element
exceeds a number obtained by multiplying together a number of said at
least one row conductor and a number of said at least one column
conductor.

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4. The switch matrix according to claim 2, wherein:
said at least one switching element is a temporary
connection type switching element.

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5. The switch matrix according to claim 2, wherein:
said at least one switching element is a push button.

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6. The switch matrix according to claim 2, wherein:
said at least one switching element is a persistent
connection type switching element.

5 7. The switch matrix according to claim 2, wherein:
said at least one switching element is a switch.

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10 8. The switch matrix according to claim 2, wherein:
said total number of said at least one switching element is
twice said number obtained by multiplying together said number of said at
least one row conductor and said number of said at least one column
conductor.

15 9. A switch matrix, comprising:
a plurality of row conductors;
a plurality of column conductors; and
a plurality of switching elements adapted to connect at least
one of said plurality of row conductors to at least one of said plurality of
column conductors,
20 wherein a total number of switching elements of said
plurality of switching elements exceeds a product of a total number of row
conductors of said plurality of row conductors and a total number of
column conductors of said plurality of column conductors.

25 7 10. The switch matrix according to claim 9, wherein:
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said total number of switching elements is twice said product
of said total number of row conductors and said total number of column
conductors.

~~1. The switch matrix according to claim 9, wherein:
said plurality of switching elements is a plurality of push
buttons.~~

~~5 12. The switch matrix according to claim 9, wherein:
said plurality of switching elements is a plurality of switches.~~

~~10 13. The switch matrix according to claim 9, wherein:
said plurality of switching elements is a plurality of push
buttons and a plurality of switches.~~

~~15 14. A switch matrix, comprising:
a plurality of row conductors;
a plurality of column conductors;
at least one switching element adapted to momentarily
connect at least one of said plurality of row conductors to at least one of
said plurality of column conductors; and
at least one switching element adapted to persistently
connect at least one of said plurality of row conductors to at least one of
20 said plurality of column conductors.~~

~~25 15. The switch matrix according to claim 14, wherein:
said at least one switching element adapted to momentarily
connect said at least one of said plurality of row conductors to said at
least one of said plurality of column conductors is at least one push
button; and
said at least one switching element adapted to persistently
connect said at least one of said plurality of row conductors to said at
least one of said plurality of column conductors is at least one switch.~~

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16. A method of scanning a switch matrix, comprising:
driving one at a time at least one of a plurality of row
conductors with a predetermined voltage level;
monitoring each of a plurality of column conductors while
5 one of said plurality of row conductors is being driven with said
predetermined voltage level;
driving one at a time at least one of a plurality of column
conductors with a predetermined voltage level; and
monitoring each of a plurality of row conductors while one of
10 said plurality of column conductors is being driven with said
predetermined voltage level.

17. The method of scanning a switch matrix in accordance
with claim 16, further comprising:

15 detecting a closure of a first one of a plurality of switching
elements based on a presence of said predetermined voltage level during
monitoring of said plurality of row conductors; and
detecting a closure of a second one of a plurality of
switching elements different from said first one of said plurality of
20 switching elements, said detection of said closure of said second one of
plurality of switching element being based on a presence of said
predetermined voltage level during monitoring of said plurality of column
conductors.

25 18. The method of scanning a switch matrix in accordance
with claim 17, wherein:
said plurality of switching elements is a plurality of push
button.

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19. The method of scanning a switch matrix in accordance with claim 17, wherein:

 said plurality of switching elements is a plurality of switches.

5 20. The method of scanning a switch matrix in accordance with claim 17, wherein:

 said plurality of switching elements is a plurality of push button and a plurality of switches.

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